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Poster Exhibit

Restoration of Femoral Offset Using a Modular Dual-Tapered Trapezoid Stem

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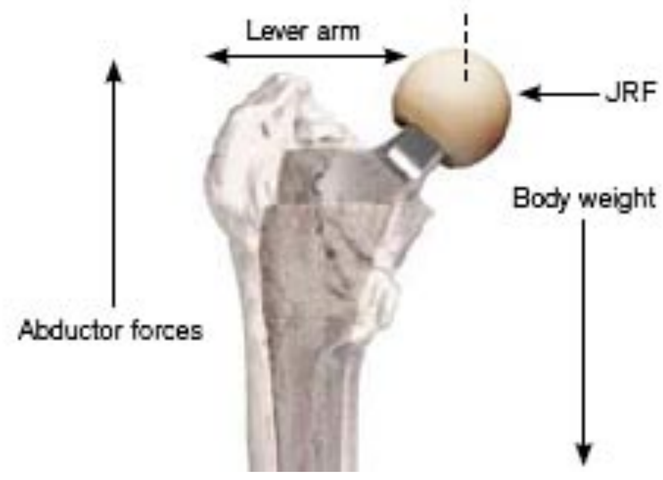
Objectives:

The importance of restoration of femoral offset is well published. However, many stems offer limited offsets. The increased trend of using tapered stem designs places more of a burden on correct restoration of hip mechanics due to the variability of mid-stem contact point during insertion.This poster is a follow-up of previous work intended to review how proximal modularity has been added to a Dual-Tapered Trapezoid Stem design. Dual taper wedge designs have a long history in Europe with growing use in the U.S. and Australia. However, single offset monoblock designs often prove inadequate in restoration of hip biomechanics.



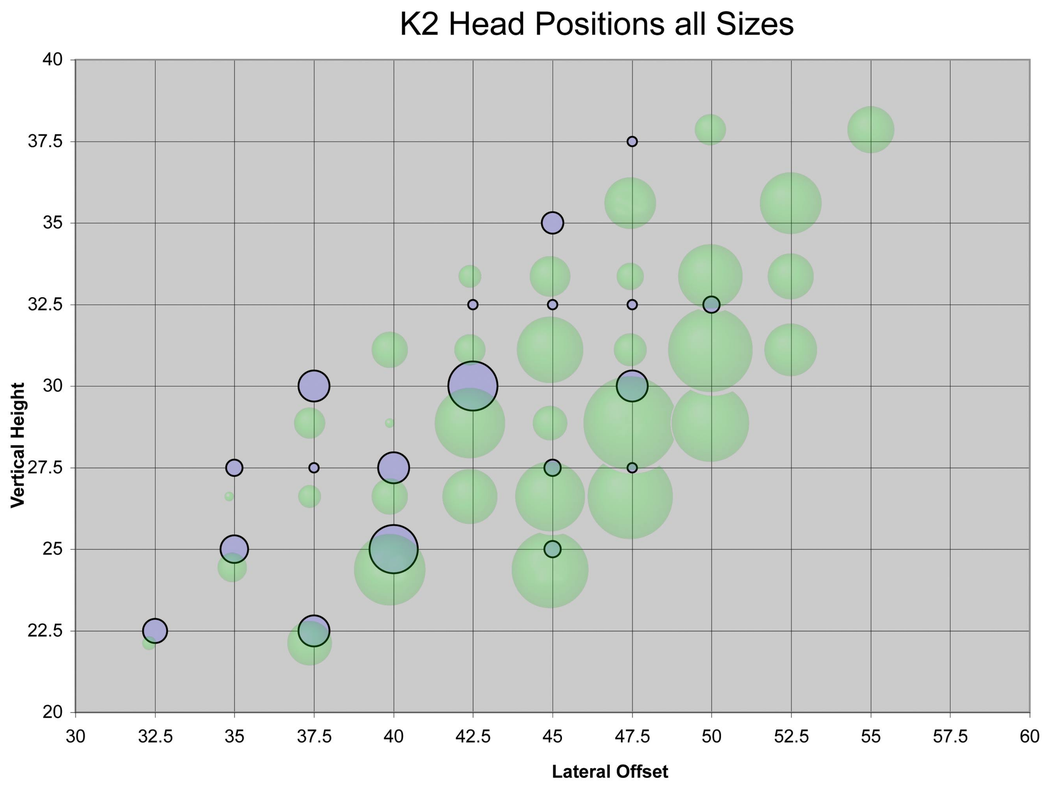
Unlike traditional dual-tapered stem designs, the K2™ proximal modular stem allows intra-operative versatility with the ability to independently select the correct stem, neck and head configuration based on individual patient anatomy.

Monoblock style Tapered Stem

Materials and Methods:

Head center data for this stem has been reviewed as to previous published works that confirm that a wide variety of offsets and lengths are required to properly balance the soft tissues.

Further, when the data were sorted by distal stem diameter, it was clear that there is little correlation between head center location and stem size. Further, a significant number of small stems required large offsets. Modular stem designs have historically raised concerns about fatigue strength and generation of particulate debris leading to third body wear. High cycle fatigue testing demonstrates this Dual Press™ technology provides similar structural properties to many monoblock designs.



Green previous Apex modular straight stem design
Blue tapered K2 stem design

Testing on abrasion wear generation was less than .004mg after 48.5 million loading cycles. This is in comparison to be 1000x below yearly volumetric wear to published reports on MOM articulations.

Conclusions:

This contemporary modular tapered stem design allows independent selection of stem, neck and head combinations providing last minute fine tuning of joint mechanics without disruption of implant to bone interfaces. The head center data suggest that hip joint reconstruction benefits from the availability of many head centers for every stem size.

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